



## Root Cause Analysis

A quality process driven organization has a consistent standardized process in developing and delivering their products and services. Having this system established, understood and utilized creates a real differentiating factor in the marketplace which delivers projects efficiently with comprehensive quality based documentation, tools and techniques.

Root Cause Analysis is a class of problem solving methods aimed at identifying the root causes of problems or events. This practice is predicated on the belief that problems are best solved by attempting to correct or eliminate root causes, as opposed to merely addressing the immediately obvious symptoms. By directing corrective measures at root causes, it is hoped that the likelihood of problem recurrence will be minimized.

Participants will bring information on specific company projects to be worked on during this training for real application of these concepts, tools and techniques.

- First, the basics of Root Cause Analysis are discussed to gain a common understanding of the standard practices, tools and techniques that are utilized in multiple industries.
- Next, participants will focus on gaining an understanding the standard practices, tools and techniques that are applied to investigate the problem.
- Lastly, participants will apply these tools on specific company projects utilizing Root Cause Analysis methodologies, tools and techniques.



## Course Syllabus

### I IDENTIFYING INFORMATION

|                      |  |  |
|----------------------|--|--|
| <b>Course:</b>       | Root Cause Analysis  |  |
| <b>Prerequisite:</b> | Understanding of the vehicle product development process<br>Understanding of basic product and manufacturing engineering |  |
| <b>Time Frame:</b>   | 40 total contact hours, 4 modules will be covered  |  |
| <b>Instructors:</b>  | Bill Szuch   | Joe Tori   |
|                      | BS in ME and MBA   | BS in Journalism   |
|                      | 30 years in engineering  | 30 years in engineering  |
| <b>Mobile:</b>       | Bill Szuch (248) 762-2281  | Joe Tori (248) 705-0807  |
| <b>E-mail:</b>       | <a href="mailto:wgsz@comcast.net">wgsz@comcast.net</a>   | <a href="mailto:JTori@g2businessdevelopment.com">JTori@g2businessdevelopment.com</a> |

### II REFERENCE MATERIALS

1. Root Cause Analysis: Simplified Tools and Techniques, 2<sup>nd</sup> Edition by Bjorn Andersen and Tom Fagerhaug
2. Apollo Root Cause Analysis: A New Way of Thinking by Dean Gano
3. The Basics of FMEA, 2<sup>nd</sup> Edition by Robin McDermott
4. Advanced Product Quality Planning and Control Plan, 2<sup>nd</sup> Edition by AIAG
5. Potential Failure Mode and Effects Analysis, 4<sup>th</sup> Edition by AIAG
6. Production Part Approval Process, 4<sup>th</sup> Edition by AIAG
7. Measurement Systems Analysis, 3<sup>rd</sup> Edition by AIAG
8. Statistical Process Control, 2<sup>nd</sup> Edition by AIAG

### III COURSE GOALS AND OBJECTIVES

1. Understanding of the Root Cause Analysis philosophy and methodologies
2. Understanding of how to identify the root cause of the problem
3. Understanding of how to develop a solution
4. Understanding of how to validate the solution
5. Understanding of how to implement the solution
6. Application of a Root Cause Analysis system



#### **IV METHODOLOGY**

This course is a micro view of the Root Cause Analysis processes, tools and techniques. We will be dealing with a detailed interpretation of meanings and applications as applied to executing company projects. Each module will introduce new material that will prepare the student for the projects to be completed.

##### **Lectures**

Each detailed subject will be presented in a lecture format outlining the theory and standardized accepted methodology. A PDF file of the lecture material will be provided for the student's personal use as reference material. Lecture note outlines will be distributed to the students for each lecture to help the student capture personal notes. A short video showing the concept covered and a discussion regarding application.

##### **Specific Industry Examples**

Real life industry examples will be covered that detail out the application of the theory to demonstrate how different companies apply these tools and techniques. This will give the students a clear understanding of how and why these techniques are utilized at different companies and industries in different manners.

##### **In-Class Assignments**

Using the theory and industry examples the student will conduct several projects that outline each key principal on in-class projects. These projects will increase in complexity as the students further develop their skills in applying these tools and techniques. The students will present their work to the group for review and discussion.

##### **Specific Company Application**

As a summary of the training we will apply these tools and techniques on a specific company project that is currently in development by the students. This will build a standard methodology on how to appropriately apply the Root Cause Analysis processes and principals at your company.



**V COURSE OUTLINE & ASSIGNMENTS**

**Module 1**

Introduction to Root Cause Analysis  
Industry Examples  
In-Class Assignment, finding the root  
Group Project

PowerPoint lecture  
PowerPoint lecture  
Complete & present  
PowerPoint lecture

**Module 2**

Introduction to Failure Mode & Effects Analysis  
Industry Examples  
In-Class Assignment, design FMEA  
In-Class Assignment, process FMEA

PowerPoint lecture  
PowerPoint lecture  
Complete & present  
Complete & present

**Module 3**

Developing the Solution  
In-Class Assignment, solution tools & techniques

PowerPoint lecture  
Complete & present

**Module 4**

Validation of the Root Cause  
In-Class Assignment, validation tools & techniques  
Implementation of the Solution  
In-Class Assignment, implementation tools & techniques

PowerPoint lecture  
Complete & present  
PowerPoint lecture  
Complete & present